

Remarks / Arguments

With the cancellation of claims 6, 12 and 19, claims 1-5, 7-11, 13-18, and 20 are pending in the present application. Claims 1, 8, 15, 18 and 20 have been amended to better define the claimed invention. No new matter is introduced herein.

Claims 1, 2, 4-6, 8-13, 15 and 16 have been rejected under 35 USC 103(a) as being unpatentable over U.S. Published Patent Application No. 2003/0198478 to Vrazel et al. (hereinafter “Vrazel”) in view of U.S. Patent No. 6,563,623 to Penninckx et al. (hereinafter “Penninckx”). While reserving the right to pre-date these references, Applicants respectfully submit that this rejection does not apply to the claims, as amended, even if these references are in fact prior art.

The Examiner contends that Vrazel discloses driving at least two modulators with at least two data signals to generate an optical signal using differential phase shift keying (DPSK) and amplitude shift keying (ASK), but concedes that Vrazel does not disclose that the data signals are synchronized and have the same data rate. The Examiner contends, without support, that it would have been obvious to an artisan of ordinary skill in the art to provide data signals that are synchronous and have the same data rate.

Applicants respectfully disagree. As Vrazel demonstrates, it is possible to implement a DPSK/ASK modulation scheme without teaching whether the data signals are synchronized or have the same data rate. While contending that it would be obvious to do so, the Examiner does not point to any reason or motivation to incur any additional constraint or complexity that may be entailed in providing synchronous data signals having the same data rate.

Moreover, the parameter extinction ratio (ER) as it relates to the DP-ASK modulated optical signal is meaningless unless the data signals are synchronous. Unless the data signals are synchronous, there will be no fixed high and low signal levels from which the ER of the modulated optical signal could be determined; i.e., the DP-ASK modulated optical signal would not have a prescribed ER, as recited in independent claims 1, 8, 15 and 18.

The Examiner also concedes that Vrazel does not disclose DPSK/ASK modulation with an extinction ratio of between about 5 dB and about 10 dB, as recited in independent claims 1, 8, 15 and 18, as amended. The Examiner simply points to Penninckx for the

proposition that “it is well known that the optical signal has extinction ratio.” Penninckx, however, describes a Phase-Shaped Binary Transmission (PSBT) scheme, and not a DPSK/ASK scheme, as in the present invention. Moreover, even if the teachings of Vrazel and Penninckx can be combined as proposed by the Examiner, there has been no showing how Penninckx overcomes the above-discussed deficiencies in the teachings of Vrazel so that the combination would disclose all elements of the claimed invention.

For the foregoing reasons, Applicants respectfully assert that claims 1, 2, 4, 5, 8-11, 13, 15 and 16, as amended, are not rendered obvious by Vrazel in view of Penninckx and that the rejection of these claims should be withdrawn.

The Examiner has rejected claims 18-20 under 35 USC 103(a) as being unpatentable over U.S. Patent No. 6,626,589 to Epworth (hereinafter “Epworth”), in view of U.S. Published Patent Application No. 2004/0021829 to Griffin (hereinafter “Griffin”), and further in view of Penninckx. While reserving the right to pre-date these references, Applicants respectfully disagree with this rejection, even if these references are in fact prior art.

Epworth describes a scheme in which the header of a data stream is modulated using DPSK, whereas the payload, which follows the header at a later time, is modulated using ASK. The two types of modulation are temporally separated and are applied at different times to the data stream. In other words, unlike the DP-ASK modulation scheme of the present invention, the DPSK and ASK modulation described in Epworth do not act on an optical carrier at the same time. As such, Epworth does not teach “an optical 4-ary DP-ASK transmitter,” as recited in independent claim 18.

Even if the teachings of Epworth were properly combinable with those of Griffin and Penninckx, there is no indication how Griffin and Penninckx would overcome the above-discussed deficiency of Epworth.

For the foregoing reasons, Applicants respectfully assert that claims 18 and 20, as amended, are not rendered obvious by Epworth in view of Griffin and Penninckx and that the rejection of these claims should be withdrawn.

Lastly, the Examiner rejects claims 3, 7, 14 and 17 under 35 USC 103(a) as being unpatentable over Vrazel in view of U.S. Patent Application Publication No. 2004/0125435 to Liu et al. (hereinafter "Liu"). Applicants respectfully disagree.

While the Examiner asserts that Liu teaches the use of nonlinear-phase-shift compensation and the generation of RZ optical signals, there is no assertion that Liu teaches the deficiencies of Vrazel discussed above in connection with independent claims 1, 8, 15 and 18. Thus, even assuming arguendo that Vrazel and Liu can properly be combined, their combined teachings would not render obvious dependent claims 3, 7, 14 and 17. Withdrawal of the 35 USC 103(a) rejection of these claims is therefore in order.

Applicants respectfully submit that all pending claims in their present form are allowable. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, there remain any unresolved issues requiring adverse action in any of the claims now pending in this application, the Examiner is urged to contact the undersigned so that any such issues can be resolved as expeditiously as possible.

Respectfully submitted,

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